

WHAT IS CLAIMED IS:

1. A method for manufacturing a conductive pattern forming body comprising:

a pattern forming body substrate preparing process of preparing pattern forming body substrate comprising a base material, and a photocatalyst containing layer formed on the base material comprising a photocatalyst and a binder whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced;

a wettability pattern forming process of forming wettability pattern comprising a liquid repellent area and a lyophilic area on the photocatalyst containing layer by irradiating the photocatalyst containing layer in a pattern with energy;

a metal colloid coating process of adhering a metal colloid only to the lyophilic area of the surface of the photocatalyst containing layer on which the wettability pattern is formed, by coating the metal colloid; and

a conductive pattern forming process of forming conductive pattern by solidifying the metal colloid adhered to the lyophilic area of the wettability pattern.

2. The method for manufacturing a conductive pattern forming body according to claim 1 wherein the photocatalyst containing layer contains a decomposable material which is decomposed by an action of the photocatalyst by energy irradiation whereby the wettability of the photocatalyst containing layer

can be changed.

3. The method for manufacturing a conductive pattern forming body according to claim 1 wherein the binder is a layer containing an organopolysiloxane.

4. The method for manufacturing a conductive pattern forming body according to claim 3 wherein the organopolysiloxane is a polysiloxane containing a fluoroalkyl group.

5. The method for manufacturing a conductive pattern forming body according to claim 1 wherein, after the conductive pattern forming process, the method further comprises a non-drawn part removing process of removing a non-conductive pattern part on which a conductive pattern part is not formed.

6. The method for manufacturing a conductive pattern forming body according to claim 1 wherein the metal colloid is a silver colloid or a gold colloid using water as a medium.

7. The method for manufacturing a conductive pattern forming body according to claim 1 wherein the coating of the metal colloid in the metal colloid coating process is a dip coating method or a spin coating method.

8. The method for manufacturing a conductive pattern forming body according to claim 1 wherein the coating of the

metal colloid in the metal colloid coating process is a nozzle discharging method.

9. The method for manufacturing a conductive pattern forming body according to claim 8 wherein the nozzle discharging method is an ink jet method.

10. The method for manufacturing a conductive pattern forming body according to claim 1 wherein the photocatalyst is titanium oxide ( $\text{TiO}_2$ ).

11. A method for manufacturing a conductive pattern forming body comprising:

a pattern forming body substrate preparing process of preparing pattern forming body substrate comprising a base material, a photocatalyst treatment layer formed on the base material containing at least a photocatalyst, and a wettability variable layer formed on the photocatalyst treatment layer which is a layer whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced;

a wettability pattern forming process of forming wettability pattern comprising a liquid repellent area and a lyophilic area on the wettability variable layer by irradiating the wettability variable layer in a pattern with energy;

a metal colloid coating process of adhering a metal colloid only to the lyophilic area of the surface of the wettability variable layer on which the wettability pattern is formed, by

coating the metal colloid; and

a conductive pattern forming process of forming conductive pattern by solidifying the metal colloid adhered to the lyophilic area of the wettability pattern.

12. The method for manufacturing a conductive pattern forming body according to claim 11 wherein the wettability variable layer is a layer containing an organopolysiloxane.

13. The method for manufacturing a conductive pattern forming body according to claim 12 wherein the organopolysiloxane is a polysiloxane containing a fluoroalkyl group.

14. The method for manufacturing a conductive pattern forming body according to claim 11 wherein, after the conductive pattern forming process, the method further comprises a non-drawn part removing process of removing a non-conductive pattern part on which a conductive pattern part is not formed.

15. The method for manufacturing a conductive pattern forming body according to claim 11 wherein the metal colloid is a silver colloid or a gold colloid using water as a medium.

16. The method for manufacturing a conductive pattern forming body according to claim 11 wherein the coating of the metal colloid in the metal colloid coating process is a dip coating method or a spin coating method.

17. The method for manufacturing a conductive pattern forming body according to claim 11 wherein the coating of the metal colloid in the metal colloid coating process is a nozzle discharging method.

18. The method for manufacturing a conductive pattern forming body according to claim 17 wherein the nozzle discharging method is an ink jet method.

19. The method for manufacturing a conductive pattern forming body according to claim 11 wherein the photocatalyst is titanium oxide ( $\text{TiO}_2$ ).

20. A method for manufacturing a conductive pattern forming body comprising:

a pattern forming body substrate preparing process of preparing pattern forming body substrate comprising a base material, a photocatalyst treatment layer formed on the base material containing at least a photocatalyst, and a decomposition removal layer formed on the photocatalyst treatment layer which is decomposed and removed by an action of the photocatalyst by energy irradiation;

a decomposition removal pattern forming process of forming a decomposition removal pattern on the decomposition removal layer by irradiating the decomposition removal layer in a pattern with energy;

a metal colloid coating process of adhering a metal colloid in a pattern to the surface of the decomposition removal layer on which the decomposition removal pattern is formed, by coating the metal colloid; and

a conductive pattern forming process of forming conductive pattern by solidifying the metal colloid adhered in a pattern.

21. The method for manufacturing a conductive pattern forming body according to claim 20 wherein a contact angle of a liquid to the decomposition removal layer is different from the contact angle of a liquid to the photocatalyst treatment layer bared by the decomposition of the decomposition removal layer.

22. The method for manufacturing a conductive pattern forming body according to claim 20 wherein the decomposition removal layer is any one of a self-assembled monolayer, a Langmuir Blodgett film and a layer-by-layer self-assembled film.

23. The method for manufacturing a conductive pattern forming body according to claim 20 wherein, after the conductive pattern forming process, the method further comprises a non-drawn part removing process of removing a non-conductive pattern part on which a conductive pattern part is not formed.

24. The method for manufacturing a conductive pattern forming body according to claim 20 wherein the metal colloid

is a silver colloid or a gold colloid using water as a medium.

25. The method for manufacturing a conductive pattern forming body according to claim 20 wherein the coating of the metal colloid in the metal colloid coating process is a dip coating method or a spin coating method.

26. The method for manufacturing a conductive pattern forming body according to claim 20 wherein the coating of the metal colloid in the metal colloid coating process is a nozzle discharging method.

27. The method for manufacturing a conductive pattern forming body according to claim 26 wherein the nozzle discharging method is an ink jet method.

28. The method for manufacturing a conductive pattern forming body according to claim 20 wherein the photocatalyst is titanium oxide ( $\text{TiO}_2$ ).

29. A method for manufacturing a conductive pattern forming body comprising:

a property variable pattern forming process of placing a photocatalyst treatment layer side substrate comprising a base member and a photocatalyst treatment layer containing a photocatalyst, and a pattern forming body substrate comprising a property variable layer whose property is changed by an action

of a photocatalyst in the photocatalyst treatment layer so that the photocatalyst treatment layer and the property variable layer are placed with a gap of 200  $\mu\text{m}$  or less, and then, irradiating with energy from predetermined direction to form a property variable pattern, whose property is changed, on a surface of the property variable layer;

a metal colloid coating process of adhering a metal colloid in a pattern to the surface of the pattern forming body substrate on which the property variable pattern is formed by coating the metal colloid; and

a conductive pattern forming process of forming conductive pattern by solidifying the metal colloid adhered in a pattern to the property variable pattern.

30. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the photocatalyst treatment layer side substrate comprises the base member and the photocatalyst treatment layer formed on the base member in a pattern.

31. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the photocatalyst treatment layer side substrate prepared in the photocatalyst treatment layer side substrate preparing process comprises the base member, the photocatalyst treatment layer formed on the base member, and a photocatalyst treatment layer side light shielding part formed in a pattern; and



an energy irradiation in the property variable pattern forming process is carried out from the photocatalyst treatment layer side substrate.

32. The method for manufacturing a conductive pattern forming body according to claim 31 wherein, in the photocatalyst treatment layer side substrate, the photocatalyst treatment layer side light shielding part is formed in a pattern on the base member, and the photocatalyst treatment layer is further formed thereon.

33. The method for manufacturing a conductive pattern forming body according to claim 31 wherein, in the photocatalyst treatment layer side substrate, the photocatalyst treatment layer is formed on the base member, and the photocatalyst treatment layer side light shielding part is formed in a pattern on the photocatalyst treatment layer.

34. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the photocatalyst treatment layer is a layer formed by forming a photocatalyst as a film on the base member by a vacuum film forming method.

35. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the photocatalyst treatment layer is a layer comprising a photocatalyst and a binder.

36. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the photocatalyst is titanium oxide ( $\text{TiO}_2$ ).

37. The method for manufacturing a conductive pattern forming body according to claim 29 wherein, in the pattern forming body substrate preparing process, the pattern forming body substrate is prepared by forming the property variable layer on a base material.

38. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the property variable layer is a wettability variable layer whose wettability is changed so as a contact angle to a liquid is reduced by an action of the photocatalyst in the photocatalyst containing layer when energy is irradiated.

39. The method for manufacturing a conductive pattern forming body according to claim 38 wherein the wettability variable layer is a layer containing an organopolysiloxane.

40. The method for manufacturing a conductive pattern forming body according to claim 39 wherein the organopolysiloxane is a polysiloxane containing a fluoroalkyl group.

41. The method for manufacturing a conductive pattern forming body according to claim 38 wherein the pattern forming

body substrate comprises the wettability variable layer having a self-supporting ability.

42. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the property variable layer is a decomposition removal layer which is decomposed and removed by an action of the photocatalyst in the photocatalyst treatment layer when energy is irradiated.

43. The method for manufacturing a conductive pattern forming body according to claim 42 wherein a contact angle of a liquid to the decomposition removal layer is different from a contact angle of a liquid to the base material bared by the decomposition and removal of the decomposition removal layer.

44. The method for manufacturing a conductive pattern forming body according to claim 42 wherein the decomposition removal layer is any one of a self-assembled monolayer, a Langmuir Blodgett film, and a layer-by-layer self-assembled film.

45. The method for manufacturing a conductive pattern forming body according to claim 29 wherein a clearance between the photocatalyst treatment layer and the surface of the property variable layer is in a range of 0.2  $\mu\text{m}$  to 10  $\mu\text{m}$ , when energy is irradiated to the surface of the property variable layer.

46. The method for manufacturing a conductive pattern

forming body according to claim 29 wherein the property variable layer is a layer containing no photocatalyst.

47. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the metal colloid is a silver colloid or a gold colloid using water as a medium.

48. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the coating of the metal colloid in the metal colloid coating process is a dip coating method or a spin coating method.

49. The method for manufacturing a conductive pattern forming body according to claim 29 wherein the coating of the metal colloid in the metal colloid coating process is a nozzle discharging method.

50. The method for manufacturing a conductive pattern forming body according to claim 49 wherein the nozzle discharging method is an ink jet method.

51. A conductive pattern forming body comprising: a base material; a photocatalyst containing layer which is a layer formed on the base material whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced, and contains at least a photocatalyst and a binder; and a metal composition formed on the photocatalyst containing layer by

solidifying a metal colloid in a pattern.

52. The conductive pattern forming body according to claim 51 wherein the photocatalyst containing layer contains a decomposable material which is decomposed by an action of the photocatalyst by energy irradiation and a wettability of the photocatalyst containing layer can be changed by this.

53. A conductive pattern forming body comprising: a base material; a photocatalyst containing layer which is a layer formed on the base material in a pattern whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced, and contains at least a photocatalyst and a binder; and a metal composition formed on the photocatalyst containing layer by solidifying a metal colloid.

54. The conductive pattern forming body according to claim 53 wherein the photocatalyst containing layer contains a decomposable material which is decomposed by an action of the photocatalyst by energy irradiation and a wettability of the photocatalyst containing layer can be changed by this.

55. A conductive pattern forming body comprising: a base material; a photocatalyst treatment layer contains at least a photocatalyst, on the base material; a wettability variable layer whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced, on the photocatalyst

treatment layer; and a metal composition formed on the wettability variable layer by solidifying a metal colloid in a pattern.

56. A conductive pattern forming body comprising: a base material; a photocatalyst treatment layer contains at least a photocatalyst, on the base material; a wettability variable layer whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced, formed in a pattern on the photocatalyst treatment layer; and a metal composition formed on the wettability variable layer by solidifying a metal colloid.

57. A conductive pattern forming body comprising: a base material; a photocatalyst treatment layer contains at least a photocatalyst, formed in a pattern on the base material; a wettability variable layer whose wettability of an energy irradiated part is changed so as a contact angle to a liquid is reduced, formed on the photocatalyst treatment layer; and a metal composition formed on the wettability variable layer by solidifying a metal colloid.

58. A conductive pattern forming body comprising: a base material; a photocatalyst treatment layer contains at least a photocatalyst, on the base material; a decomposition removal layer which is a layer decomposed and removed by an action of the photocatalyst when energy is irradiated, on the photocatalyst treatment layer; and a metal composition formed on the

photocatalyst treatment layer which is the decomposition removal layer is decomposed and removed, by solidifying a metal colloid in a pattern.

59. The conductive pattern forming body according to claim 58 wherein the decomposition removal layer is any one of a self-assembled monolayer, a Langmuir Blodgett film, and a layer-by-layer self-assembled film.

60. A conductive pattern forming body comprising: a wettability variable layer whose wettability is changed by an action of a photocatalyst; and a metal composition formed on the wettability variable layer by solidifying a metal colloid in a pattern.

61. The conductive pattern forming body according to claim 60 wherein the wettability variable layer is formed on a base material.

62. The method for manufacturing a conductive pattern forming body according to claim 60 wherein the wettability variable layer is a layer containing an organopolysiloxane.

63. The conductive pattern forming body according to claim 62 wherein the organopolysiloxane is a polysiloxane containing a fluoroalkyl group.

64. A conductive pattern forming body comprising: a base material; a decomposition removal layer on the base material which is decomposed and removed by an action of a photocatalyst; and a metal composition formed on the base material which is bared by the decomposition and removal of the decomposition removal layer, by solidifying a metal colloid in a pattern.

65. The conductive pattern forming body according to claim 64 wherein a contact angle of the decomposition removal layer to a liquid is different from a contact angle of the base material, which is bared by the decomposition of the decomposition removal layer, to a liquid.

66. The conductive pattern forming body according to claim 64 wherein the decomposition removal layer is any one of a self-assembled monolayer, a Langmuir Blodgett film and a layer-by-layer self-assembled film.

67. A conductive pattern forming body comprising: a base material; a wettability variable layer formed in a pattern on the base material whose wettability is changed by an action of a photocatalyst; and a metal composition formed on the wettability variable layer, by solidifying a metal colloid.